

of this type were selected for each fiscal year. These claims were then matched back to the master Medicaid eligibles file in order to extract the zip code of the patient's residence. Number of claims and number of Medicaid eligibles were then tabulated for each fiscal year by zip code of residence. Claims for North Carolina residents going to out-of-state hospitals are included, and so we can get a complete picture of North Carolina residents' utilization experience. The number of Medicaid eligibles as of January 1 of each fiscal year was used as a denominator for computing utilization rates. In fiscal year 1981 only, the data were tabulated by county of residence as well as by zip code.

For both years the data were distributed to the Health Systems Agencies and to the Division of Medical Assistance as an aid to identifying high-utilization areas. To aid this identification process, computer-drawn maps of utilization rates by zip code for the 1980 data were produced.

The present study goes beyond this descriptive use of the information and examines correlates of the 1981 county-level emergency room use rates.

### Analysis

The original hypothesis behind collecting these data was that high emergency room use could be related to a lack of primary care physicians in an area that serve Medicaid patients, and that high-use areas would therefore be candidates for placement of additional primary care resources. To quantify this relationship, fiscal year 1980-81 data from the Division of Medical Assistance were assembled on claims paid for physician primary care services (office visits). Number of Medicaid recipients and number of claims paid to physicians with specialties of general and family practice, pediatrics, internal medicine, and obstetrics-gynecology were coded and keypunched for each county. These data are available by county of practice of the physicians. The number of Medicaid claims for primary care services provided in local health departments was added from a file of the Division of Health Services. But it was found that only 694 out of 837,000 North Carolina Medicaid claims for primary care services occurred in the local health departments.

Before looking at the relationships between variables, a brief description of emergency room utilization by Medicaid eligibles will be presented. In fiscal year 1979-80 in North Carolina there were 46.4 emergency room visits per 100 Medicaid eligibles, and in 1980-81 this rate was 46.7, showing essentially no change in the state average rate. This compares to an estimated 28.4 emergency department visits per 100 persons in the United States in 1980 (Medicaid plus all others) (1). There is, however, tremendous variation in this utilization rate among North Carolina counties and among zip code areas. Among 100 counties the standard deviation of the rate is about 35 percent of the mean rate, and the highest rates are nearly ten times the size of the lowest. Among approximately 900 zip codes the standard deviation is slightly larger than the mean rate. Table 1 lists the ten zip codes with the highest rates in 1980 and 1981, and Table 2 lists the ten counties with the highest rates in 1981. Rates with less than 20 Medicaid eligibles in the denominator were excluded from Table 1, since 1 eligible with 3 visits, for example, would produce a rate of 300. In Table 1, two of the zip codes show up in the top ten in both 1980 and 1981. Surry, Gaston, and